

METRIC

FACILITIES UNIT COSTS - MILITARY CONSTRUCTION **PAX NEWSLETTER NO. 3.2.2 - 20 March 2003**

This updated newsletter supersedes the PAX Newsletter No. 3.2.2, 02 Jan 2003, and updates the Appendix A (Part I & II), Facility Unit Cost Tables, Appendix C, Tri-Service Military Construction Program (MCP) Index, and Table 1, Size Adjustment Factors, contained in TM 5-800-4, Programming Cost Estimates for Military Construction, dated May 1994. It may be used as a guide for preparation and/or review of the Army military construction cost estimates for programming and budgeting purposes for FY 2005/2006 and beyond unless otherwise noted. This newsletter is also published and maintained on the web page at <http://www.hq.usace.army.mil/cemp/e/ec/pax/paxtoc.htm>.

1. APPENDIX A - FACILITY UNIT COST TABLE (Part I - Buildings & Major Facilities, and Part - II, Support Facilities)

a. The tabulation is arranged numerically by category codes. Category code series descriptions are contained in DA Pamphlet 415-28, Guide to Army Real Property Category Codes, February 2000. Where unit costs span a group of subcategories, the five (5) digit category code is designated by adding XX behind the three (3) digit main category code for this group. For example, 851XX and 852XX are designated for roads, streets, parking, apron and sidewalks pavements.

b. Unit costs reflected herein are forecasted to an assumed midpoint of construction date of 1 October 2005 (MCP Index = 2276) for an area cost factor (ACF) of 1.00. These unit costs do not include allowances for construction contingencies and S&A, but do include contractor's markup cost for overhead & profit.

c. Unit costs reflected herein should be adjusted by the appropriate area cost factor, cost escalation factor as described in Appendix C, size adjustment factor in Table I, and other adjustment factors as described in the TM 5-800-4, when applicable. The ACF list is contained in Appendix B, Location Adjustment Factors in the TM 5-800-4, and updated by the latest PAX Newsletter No. 3.2.1, Area Cost Factors Indexes, which is also available on the web page as addressed above.

d. Building size identified in Part I of Appendix A is a reference size, but may not be a standard size from facility standard design criteria. This quantity may be used in conjunction with Table I, Size Adjustment Factors, to determine an appropriate size adjustment factor for the proposed facility.

e. The building unit costs, including family housing, are applied to the building gross areas.

f. Building unit cost included installed building equipment normally funded with MILCON funds as described in AR 415-15. For medical facilities, the building costs include Categories A and B equipment, but exclude Categories E and F equipment.

g. Chart A in Appendix A contains unit costs for Piping. Chart C in Appendix A contains information for unit of measurement conversion factors between Metric and English Systems.

2. APPENDIX C - TRI-SERVICE MILITARY CONSTRUCTION PROGRAM (MCP) INDEX

The base cost index for the unit costs herein in Appendix A is for an assumed midpoint of construction date of 1 October 2005 (MCP Index = 2276) as described in paragraph 1.b above. For a project with an anticipated midpoint of construction date other than 1 October 2005, a cost escalation factor can be determined from this appendix as follows:

Project Anticipated Midpoint Date - Assume at 1 Jan 2007 (MCP 2326)

Cost Escalation Factor = $\text{MCP Index 1 Jan 2007} / \text{MCP Index 1 Oct 2005} = 2326/2276 = 1.022$

3. PROPONENT OF THIS NEWSLETTER: HQUSACE/CECW-EI, 202-761-5545 or DSN-763-5545, and FAX 202-761-0623 and Internet Address: "amitava.ghosh@usace.army.mil".

**APPENDIX A - FACILITY UNIT COST TABLE FOR FY05/06 MILCON
PROGRAM
PART I - BUILDINGS AND MAJOR FACILITIES (20 Mar 03)**

CATEGORY				UNIT COST	
<u>CODE</u>	<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>\$/UNIT</u>	<u>REMARK</u>
111XX	AIRFIELD RUNWAYS				SEE CATCODE 851XX
112XX	AIRFIELD TAXIWAYS				SEE CATCODE 851XX
113XX	AIRFIELD APRONS				SEE CATCODE 851XX
116XX	AIRFIELD MISC. PAVING				SEE CATCODE 851XX
124XX	FUEL STORAGE (OPERATING)	4,000	L	\$1.14	UNDERGRD STG - INCLUDES
		19,000	L	\$1.08	EXCAVATION, BACKFILL
		38,000	L	\$1.03	& MANHOLE, EXCLUDES
		76,000	L	\$1.00	EXTERIOR PIPING &
		113,500	L	\$0.93	PUMPING
13120	COMMUNICATIONS CENTER	550	M2	\$2,150.00	NO SHIELDING
	SATCOM CENTER	550	M2	\$5,231.00	W/SHIELDING & GENERATOR
13131	INFORMATION PROCESS CTR	1,950	M2	\$1,981.00	AUTOMATIC DATA PROCESSING W/RAISED FLOOR, ADMIN & STG AREAS
13310	FLIGHT CONTROL TOWER	465	M2	\$2,741.00	
14110	AIRFIELD OPS BLDG	930	M2	\$1,763.00	WITHOUT TOWER
14112	AVIATION UNIT OPS BLDG	1,115	M2	\$1,699.00	SQUADRON
14113	ACCESS CONTROL FAC	25	M2	\$2,107.00	SENTRY STATION
14114	CIDC FIELD OPS BLDG	875	M2	\$1,570.00	
14129	TRAINING AIDS CENTER	75	M2	\$1,301.00	
14132	READY BUILDING	1,860	M2	\$1,408.00	
14162	SCIF FACILITY	2,320	M2	\$1,978.00	
14165	FUELING/POL SUPP. BLDG	20	M2	\$2,270.00	ADD PUMPS (\$4500 EA) ADD STG TANKS (SEE CATCODE 124XX) AND PAVING (SEE CATCODE 851XX)
14182	BRIGADE HQS BLDG	1,650	M2	\$1,647.00	
14183	BATTALION HQS BLDG	1,020	M2	\$1,645.00	
14185	COMPANY OPS BLDG	745	M2	\$1,559.00	
14955	WASH PLATFORM, ORG	1	EA	\$69,209.00	2 VEHICLE-LOW PRES. W/WASHWATER TREAT'N
14960	GREASE RACK	1	EA	\$54,179.00	2 VEHICLE
14962	CENTRIZED WASH FAC	1	EA	\$6,759,493.00	16 STATIONS WITH WASHWATER RECYCLING
17112	FLIGHT SIMULATOR BLDG	2,975	M2	\$1,527.00	BUILDING ONLY
17119	ORGANIZATIONAL CLASSROOM	2,975	M2	\$1,387.00	
17120	GENERAL INSTRUCTION BLDG	2,300	M2	\$1,593.00	
17121	INDOOR FIRING RANGE	520	M2	\$1,225.00	
17123	RANGE SUPPORT BLDG	185	M2	\$1,193.00	
	FIELD RANGE LATRINES	55	M2	\$1,881.20	
17131	COMP ITEM REP INST BLDG	560	M2	\$1,311.00	
17132	GEN ITEM REP INST BLDG	2,320	M2	\$1,225.00	
17133	VEHICLE MAINT INST BLDG	2,800	M2	\$1,561.00	
17134	AIRCRAFT MAINT INST BLDG	3,250	M2	\$2,120.00	HIGH BAY BUILDING
17135	LABORATORY INST BLDG	835	M2	\$2,085.00	
17136	AUTO-AIDED INSTRUCTION BLDG	2,300	M2	\$1,830.00	
17137	MATERIAL HANDLING INST BLDG	3,715	M2	\$871.00	
17139	COVERED TRAINING AREA	560	M2	\$473.00	

**APPENDIX A - FACILITY UNIT COST TABLE FOR FY05/06 MILCON
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PART I - BUILDINGS AND MAJOR FACILITIES (20 Mar 03)**

17140	ARMY RESERVE CENTER BLDG	1,860	M2	\$1,399.00
17142	ARMY NATIONAL GUARD/ARMORY	1,860	M2	\$1,399.00
17971	OBSERVATION TOWER/BUNKER	75	M2	\$1,956.00 COST EXCLUDES EQUIP
21110	AIRCRAFT MAINT. HANGARS			
	MAINT GEN PURPOSE	2,150	M2	\$1,733.00
	HIGH BAY MAINTENANCE	3,250	M2	\$2,120.00
	CORROSION CONTROL	3,250	M2	\$2,096.00
21120	A/C COMPONENT MAINT SHOP	1,860	M2	\$1,387.00
21130	A/C PAINT SHOP	6,505	M2	\$2,569.00
21140	A/C ENGINE TEST CELL FAC	1,210	M2	\$1,569.00
21210	GUIDED MISSILE MAINT FAC	950	M2	\$1,752.00
21410	VEHICLE MAINT SHOP - TRACK	2,300	M2	\$1,615.00
	VEHICLE MAINT SHOP - WHEELED	2,800	M2	\$1,561.00
21470	OIL STORAGE BLDG	65	M2	\$967.00
21610	AMMO RENOVATION SHOP	605	M2	\$1,440.00
21612	AMMUNITION SURVEILLANCE	1,205	M2	\$1,623.00
21630	AMMUNITION DEMIL. FAC	7,665	M2	\$9,589.00 CHEM DEMILITARIZATION FAC
21710	ELECTRONICS MAINT. SHOP	510	M2	\$1,225.00
21740	AVIONICS MAINT SHOP	2,150	M2	\$1,593.00
21850	BATTERY SHOP	465	M2	\$1,225.00
21881	ABN EQUIP/PARACHUTE REPAIR	750	M2	\$1,722.00
21885	MAINT SHOP, GEN PURPOSE	2,420	M2	\$1,307.00
21910	ENG/HOUSING MAINT SHOP	2,900	M2	\$1,227.00
31010	CHEMISTRY LAB	835	M2	\$2,086.00
31410	GROUND TRANS EQUIPMENT BLDG	2,880	M2	\$1,591.00
411XX	LIQUID FUEL STORAGE - BULK	400	M3	\$446.00 ABOVE GRD STEEL TANKS
		800	M3	\$296.00 INCLUDES FNDTN DIKE
		1,600	M3	\$215.00 AND EXTERIOR COATINGS
		4,000	M3	\$164.00
		8,000	M3	\$120.00
		16,000	M3	\$85.00
		40,000	M3	\$75.00
		400	M3	\$469.00 ABOVE GRD STEEL TANK
		800	M3	\$311.00 W/FLOAT PANS INCLUDES
		1,600	M3	\$242.00 FNDTN DIKE, INTERIOR
		4,000	M3	\$188.00 EPOXY LINING & INTERIOR
		8,000	M3	\$147.00 COATING
		16,000	M3	\$113.00
		40,000	M3	\$105.00
42180	IGLOO STORAGE, DEPOT	450	M2	\$2,250.00 HIGH EXPLOSIVE, WITH EARTH MOUNDING
42183	G P MAGAZINE, DEPOT	930	M2	\$2,099.00 W/O CRANE
42280	IGLOO STORAGE, INST			SEE CATCODE 42180
42283	G P MAGAZINE, INST			SEE CATCODE 42183
43211	COLD STORAGE FACILITY			
	W/PROCESSING	1,000	M2	\$1,292.00
	COLD STORAGE WAREHOUSE	550	M2	\$1,722.00
44110	GENERAL PURPOSE WAREHOUSE			
	LOW BAY	3,700	M2	\$775.00 5 M STACK HEIGHT

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	HIGH BAY	9,290	M2	\$883.00 UP TO 8 M STACK HEIGHT
44130	CONTROLLED HUMIDITY WHSE	3,700	M2	\$828.00
44135	HAZARDOUS MATERIAL STORAGE	1,950	M2	\$1,333.00
44150	FLAMMABLE MATERIAL STRHSE	760	M2	\$1,268.00
44181	VEHICLE STORAGE FACILITY	1,485	M2	\$451.00 OPEN
		1,485	M2	\$666.00 ENCLOSED
44210	AC PARTS STORAGE BLDG	1,485	M2	\$774.00
44220	G P STORAGE FACILITY, INST			SEE CATCODE 44110
44222	STORAGE SHED, COVERED	2,230	M2	\$344.00 OPEN SIDES
44224	DEPLOYMENT EQUIP STG BLDG	315	M2	\$785.00
44230	CONTROLLED HUMIDITY WHSE, INST			SEE CATCODE 44130
44240	FLAMMABLE MATERIAL STRHSE, INST			SEE CATCODE 44150
45110	OPEN STORAGE AREA, DEPOT			SEE CATCODE 851XX
45210	OPEN STORAGE AREA, INST			SEE CATCODE 851XX
51010	MEDICAL CENTER/HOSPITAL	N/A	M2	\$2,196.00 STATION HOSPITAL
		N/A		\$2,626.00 REGIONAL MEDICAL CTR
				\$2,558.00 TEACHING HOSPITAL
53060	MEDICAL WAREHOUSE	4,090	M2	\$806.00
53071	AMBULANCE GARAGE	45	M2	\$720.00
54010	DENTAL CLINIC	1,860	M2	\$2,228.00
55010	MEDICAL/HEALTH CLINIC	4,650	M2	\$2,131.00
	MEDICAL/DENTAL CLINIC	5,570	M2	\$2,077.00
	AMBULATORY CLINIC	2,800	M2	\$1,959.00
61050	ADMIN FACILITY GEN PURP	2,300	M2	\$1,507.00 ADP CTR, AUDITORIUM, CAFETERIA, SECURITY & PRE-WIRED WORK STA. NOT INCLUDED
	COMMAND HQS BUILDING	3,700	M2	\$1,948.00
	PRE-WIRED WORK STATION		EA	\$5,365.00
62010	UNDERGROUND ADMIN FAC	555	M2	\$1,935.00 HARDENED FACILITY
711XX	FAMILY HOUSING W/SPRINKLERS	N/A	M2	\$764.00 CONUS \$/GROSS M2
	OR FIRE PROTECTION CONST.	N/A		\$775.00 OCONUS \$/GROSS M2
71410	DETACHED GARAGES	25	M2	\$473.00 SINGLE CAR/MASONRY
71411	CARPORT	25	M2	\$247.00 OPEN SIDES
72111	UNACCOMPANIED PERSONNEL HOUSING, ENLISTED	9,250	M2	\$1,615.00 WITHOUT DINING
	SOLDIER COMMUNITY BLDG	1,360	M2	\$1,591.00 300 PERSONS MODULE
NOTE: ALL UNFINISHED, OR FINISHED ATTIC AREAS WITH AN AVERAGE HEIGHT OF 2100 MM (6'-11") MEASURED FROM THE UNDERSIDE OF THE STRUCTURAL SYSTEM AND WITH PERIMETER WALLS MEASURING A MINIMUM 1500 MM (4'-11"), MUST BE COUNTED AS FULL SCOPE.				
72181	BASIC TRAINEE BARRACKS	34,315	M2	\$1,462.00 COST APPLIES TO ENTIRE
	COMPANY/BARRACKS	29,140	M2	\$1,365.00 COMPLEX, BLDG ONLY.
	BATTALION HQS	2,050	M2	\$1,526.00 CENTRAL ENERGY PLANT
	DINING FACILITY	3,125	M2	\$2,430.00 NOT INCLUDED.

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72210	DINING FACILITY	2,000	M2	\$2,562.00 INCLUDES MCA FUNDED KITCHEN EQUIPMENT & INSTALLATION COSTS
72410	UNACCOMP. OFFICERS QTRS	4,100	M2	\$1,615.00
72411	UNACCOMP. OFFICERS QTRS	4,100	M2	\$1,615.00 TRANSIENT
73010	FIRE STATION, COMMUNITY	750	M2	\$1,722.23
73016	POLICE/MP STATION	390	M2	\$1,582.29
73017	CHAPEL	1,400	M2	\$1,841.00
73018	RELIGIOUS EDUCATION FAC	1,400	M2	\$1,526.00 WITH FAMILY LIFE CTR.
73046	DEPENDENT SCHOOLS			
	ELEMENTARY	N/A	M2	\$1,507.00
	JUNIOR HIGH SCHOOL	N/A	M2	\$1,528.00
	HIGH SCHOOL	N/A	M2	\$1,593.00
74010	AUDITORIUM G P	370	M2	\$1,451.00
74011	BOWLING CENTER	725	M2	\$1,731.00 W/EQUIP - LANES (PIN SPOTTING EQUIP & AUTO. SCORING DEVICE)
74012	CAFETERIA	465	M2	\$1,795.00
74014	CHILD DEVELOPMENT CENTER	1,400	M2	\$1,787.00 NOT INCLUDE PLAY AREA AND EQUIPMENT. FOR OUTDOOR PLAY AREA, SEE CATCODE 75018
74021	COMMISSARY SALES STORE W/ OPERATIONAL EQUIPMENT	7,900	M2	\$1,464.00
74022	SKILL DEVELOPMENT CENTER	2,045	M2	\$1,247.00 GENERAL SKILL
74023	CREDIT UNION	280	M2	\$142.00 INCLUDES VAULT
74024	SKILL DEVELOPMENT CENTER	1,395	M2	\$1,268.00 AUTOMOTIVE CRAFTS
74025	EDUCATION CENTER	930	M2	\$1,722.00 ACES FACILITY
74028	PHYSICAL FITNESS TRNG CTR	2,800	M2	\$1,733.00 DOES NOT INCLUDE POOL
74030	SPORT PRO SHOP	2,600	M2	\$1,462.00 CLUB
74032	GUEST HOUSE	2,800	M2	\$1,518.00 TEMPORARY LODGING FACILITIES
74033	COMMUNITY SERVICE CENTER	3,160	M2	\$1,580.00
74041	MAIN LIBRARY	1,100	M2	\$1,722.00
74046	OPEN DINING CONSOLIDATED			SEE CATCODE 74047
74047	NCO OPEN DINING	1,490	M2	\$2,144.00 SERVICE CLUB
	SERVICE CLUBS	2,090	M2	\$2,443.00
74048	OFFICER OPEN DINING			SEE CATCODE 74047
74053	MAIN EXCHANGE	7,430	M2	\$1,173.00 W/MALL SERVICE SHOPS
74056	EXCHANGE SERVICE OUTLET			SEE CATCODE 74053
74066	YOUTH CENTER	1,400	M2	\$1,647.00
74068	RECREATION CENTER	1,860	M2	\$1,647.00
74070	ROLLER SKATING RINK	1,860	M2	\$1,107.00
74072	INDOOR SWIMMING POOL	560	M2	\$1,741.00 25 METER NATATORIUM
74065	RECREATIONAL EQUIP CHECKOUT	465	M2	\$806.00
75018	PLAYGROUND, G P			
	CHILD DEVELOPMENT CTR OUTDOOR PLAY AREA:			
	60 CHILD CAPACITY	560	M2	\$333.00 COST OF PLAY AREA
	99 CHILD CAPACITY	920	M2	\$269.00 INCLUDES FENCE,
	122 CHILD CAPACITY	1,135	M2	\$236.00 EQUIPMENT & SHED
	145 CHILD CAPACITY	1,350	M2	\$204.00
	198 CHILD CAPACITY	1,840	M2	\$172.00
	244 CHILD CAPACITY	2,270	M2	\$161.00
	303 CHILD CAPACITY	2,815	M2	\$140.00

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75022	MULTIPURP ATH FIELD	1	EA	\$189,370.00 TURFED AREA EXCLUDES SITES PREP & ELECTRICAL LIGHTING
75030	OUTDOOR SWIMMING POOL	1,210	M2	\$1,150.00 50 METER WITH CHANGE HOUSE
891XX	PLANT/UTILITIES BLDG		M2	\$1,763.00 NO PLANT EQUIPMENT

NO CATEGORY CODE IS AVAILABLE FOR FOLLOWING ITEMS:

FOUNDATIONS, UNUSUAL				
PILING, TREATED WOOD, 15 M L, 300MM BUTT		M		\$88.50
PILING, CONCRETE 350 MM SQUARE		M		\$131.00
PILING, CONCRETE 400 MM SQUARE		M		\$137.00
PILING, CONCRETE 460 MM DIAMETER		M		\$157.00
PILING, STEEL H, 15M LONG, HP300M		M		\$105.00
PILING, STEEL PIPE 300M D, CONC FILLED		M		\$134.00

**APPENDIX A - FACILITY UNIT COST TABLE FOR FY05/06
MILCON PROGRAM
PART II - SUPPORT FACILITIES AND ITEMS (20 Mar 03)**

CATEGORY				UNIT COST	
<u>CODE</u>	<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>\$/UNIT</u>	<u>REMARK</u>
81117	PRIME POWER PLANT		KW	\$1,041.00	EQUIPMENT ONLY - INCLUDES SWITCHGEAR
81150	UNINTER. PWR SUP (UPS)		KW	\$4,732.00	UNINTERRUPTIBLE POWER SYSTEM (UPS), COST INCLUDES STATIC SWITCHGEAR
81160	STANDBY GENERATOR				COST INCL. BATTERY, CHARGE/MUFFLER/TRANSFER SWITCH & FUEL TANK
		75	KW	\$515.00	
		125	KW	\$370.20	
		200	KW	\$295.10	
		300	KW	\$252.10	
81230	POWER PLANT BUILDING		M2	\$1,760.00	NO EQUIPMENT AND SWITCHGEAR
81241	EXTERIOR LIGHTING		M	\$104.10	UG DIRECT BURIAL, W/500 WATT MV LAMINAR
81241	OVERHEAD ELECTRIC LINES				
	H-FRAME		KM	\$67,060.00	15 KV UP TO 69 KV SHORT LINES, WOOD POLE, 3PH, 4 WIRE
	OVERHEAD W/POLES		M	\$53.10	BELOW 15 KV WOOD POLE, 3PH, 4 WIRE
81242	UNDERGRD ELECTRIC LINES				
	DIRECT BURIAL:				COSTS INCL TRENCH, SAND BASE, TREATED BOARD, BACKFILL AND MARKER
	# 1/0		M	\$51.00	3/C - 600V DB
	# 4/0		M	\$70.30	3/C - 600V DB
	UG DUCTS:				
	1-WAY-100 MM		M	\$74.65	TYPE EB, PVC, CONCRETE
	2-WAY-100 MM		M	\$88.00	ENCASED 75 MM EACH WAY,
	4-WAY-100 MM		M	\$112.70	INCLUDES EXCAVATION AND
	6-WAY-150 MM		M	\$135.70	BACKFILL TO 1 M DEEP
81320	SUBSTATION, LOAD UNTER. SW 600 AMP		KVA	\$72.95	300 KVA & BELOW W/CLF FUSES
81360	TRANSFORMERS, PRIMARY DELTA OR Y,277/480 V SECONDARY				
	150 KVA		EA	\$12,120.00	OIL-FILLED,
	500 KVA		EA	\$18,130.00	PAD-MOUNTED, 3-PHASE
	1,000 KVA		EA	\$32,730.00	
	2,000 KVA		EA	\$48,930.00	
82110	HEAT PLANT COAL-FIRED				
	STEAM:				INCLUDES FUEL & ASH HANDLING FACILITIES
	14,560 KW		EA	\$4,005,410.00	
	29,300 KW		EA	\$7,257,590.00	
	43,950 KW		EA	\$10,342,380.00	
	58,600 KW		EA	\$13,250,140.00	
	HITEMP WATER:				INCLUDES FUEL & ASH HANDLING FACILITIES

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	14,650 KW	EA	\$3,773,640.00	
	29,300 KW	EA	\$6,059,070.00	
	43,950 KW	EA	\$8,079,480.00	
	58,600 KW	EA	\$10,342,380.00	
82120	HEAT PLANT OIL-FIRED STEAM:			INCLUDES PLT EQUIP & OIL HANDLING FACILITY
	2,930 KW	EA	\$714,600.00	
	14,650 KW	EA	\$2,454,960.00	
	29,300 KW	EA	\$4,701,760.00	
	43,950 KW	EA	\$6,820,890.00	
	58,600 KW	EA	\$8,261,890.00	
	HITEMP WATER:			INCLUDES PLT EQUIP & OIL HANDLING FACILITIE
	2,930 KW	EA	\$645,930.00	
	14,650 KW	EA	\$2,280,070.00	
	29,300 KW	EA	\$4,254,340.00	
	43,950 KW	EA	\$6,059,070.00	
	58,600 KW	EA	\$7,879,910.00	
82182	SOLAR HEATING			SEE SOLAR ENERGY CONVERSION - CHART B
82210	STEAM CONDENSATE LINES COMMON CONDUIT:			INSUL, STEAM & CONDENS COST INCLUDES FITTINGS, ACCESSORIES, 1 M EXCAVATION BACKFILL AND TESTING
	282 MM	M	\$686.20	STM: 50 MM, RET: 40 MM
	250 MM	M	\$623.80	STM: 40 MM, RET: 40 MM
	250 MM	M	\$594.90	STM: 32 MM, RET: 25 MM
	250 MM	M	\$587.90	STM: 25 MM, RET: 25 MM
	SINGLE CONDUIT:			STEAM OR HITEMP WATER, COST INCLUDES FITTINGS, ACCESSORIES, 4 FT
				EXCAVATION BACKFILL AND TESTING
	150 MM	M	\$372.90	32 MM PIPE
	200 MM	M	\$398.70	40 MM PIPE
	200 MM	M	\$406.80	50 MM PIPE
	250 MM	M	\$490.90	65 MM PIPE
	250 MM	M	\$528.90	75 MM PIPE
	280 MM	M	\$637.30	100 MM PIPE
	380 MM	M	\$732.30	150 MM PIPE
82220	HOT WATER LINES COMMON CONDUIT:			INCLUDES FITTINGS, ACCESSORIES, 1 M EXCAVATION, BACKFILL & TESTING
	300 MM	M	\$534.30	HW: 25 MM, RET: 25 MM
	330 MM	M	\$653.60	HW: 40 MM, RET: 40 MM

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	380 MM	M	\$806.90	HW: 50 MM, RET: 50 MM
	450 MM	M	\$881.40	HW: 75 MM, RET: 75 MM
	530 MM	M	\$1,031.00	HW:100 MM, RET: 100 MM
	STEAM DIST MANHOLE PREFAB STEEL 2.5 M X 2.0 M HT	EA	\$16,530.00	INCL LADDER, CONDUIT, VENT, MH VENT, NORMAL PIPING & INSTALLATIC
82410	GAS PIPE LINES			SEE CHART A
82610	AIR CONDITIONING/REFRIG PLANT NEW BLDG	KW	\$904.70	
	EXISTING BLDG	KW	\$1,269.00	
83140	INDUSTRIAL WASTE TREATMENT PLANT	EA	\$1,718,860.00	2,000,000 LPM
83150	SEWAGE LIFT STATION	EA	\$203,310.00	4,000 LPD
83210	SANITARY SEWER			SEE CHART A
	SANITARY SEWER MANHOLES CONCRETE, CIP UP TO 2.5 M DEEP	VM	\$1,524.00	1.2 M ID, INCLUDES
	OVER 2.5 M DEEP	VM	\$1,627.00	FOOTING, EXCAVATION, 600 MM D COVER, & FR
	CONCRETE, PCST: UP TO 2.5 M DEEP	VM	\$1,017.00	
	OVER 2.5 M DEEP	VM	\$1,126.00	
	MISC: CATCH BASINS	EA	\$2,233.00	1.2 M DEEP
	CATCH BASINS	EA	\$2,976.00	1.8 M DEEP
	CURB INLETS	EA	\$578.70	GUTTERMOUTH
83310	INCINERATOR	EA	\$40,560.00	90 KG PER HR PER UNIT (EQUIPMENT ONLY)
84210	WATER DISTRIBUTION LINES			SEE CHART A
84472	WATER PUMP STATION, NONPOTABLE 30 LPS	EA	\$71,840.00	INCLUDES DIESEL DRIVE,
	60 LPS	EA	\$98,210.00	AUTO CONTROLS, FILLINGS &
	120 LPS	EA	\$110,430.00	ACCESSORIES, COMPLETE
	150 LPS	EA	\$113,700.00	W/INSTALLATION COSTS
84610	WATER STORAGE TANK			
	ELEVATED WATER STG TANK 200 M3	EA	\$368,830.00	INCLUDES STEEL STG TANK
	400 M3	EA	\$462,670.00	STANDPIPE, 38 M HIGH TOWER,
	600 M3	EA	\$554,340.00	VALVES AND STD
	1,000 M3	EA	\$638,360.00	FOUNDATIONS, BUT DOES NOT
	2,000 M3	EA	\$1,026,830.00	INCLUDE PUMPHOUSE

APPENDIX A - FACILITY UNIT COST TABLE FOR FY05/06
MILCON PROGRAM
PART II - SUPPORT FACILITIES AND ITEMS (20 Mar 03)

	3,000 M3	EA	\$1,418,470.00	
	4,000 M3	EA	\$1,803,670.00	
	GROUND STG TANK (WATER)			
	400 M3	EA	\$255,370.00	INCLUDES CONCRETE TANK
	1,000 M3	EA	\$423,390.00	AND STD FOUNDATIONS, BUT
	2,000 M3	EA	\$521,570.00	DOES NOT INCLUDE EXTERNAL
	4,000 M3	EA	\$700,540.00	PIPING AND PUMPING
	8,000 M3	EA	\$1,009,350.00	
	16,000 M3	EA	\$1,596,580.00	
84620	RESERVOIR, POTABLE			
	1,000 M3	EA	\$412,450.00	INCLUDES 150 MM CONCRETE
	2,000 M3	EA	\$550,010.00	FLOOR SLAB ORDINARY
	4,000 M3	EA	\$759,450.00	EXCAVATION AND PUMPING
	8,000 M3	EA	\$1,167,390.00	WITHIN
	16,000 M3	EA	\$1,918,470.00	
851XX	ROADS			
	A/C SURFACE			FOR PAVEMENT ONLY, A/C SURFACE
	40 MM	M2	\$4.50	NO EARTHWORK INCLUDED
	50 MM	M2	\$5.85	URBAN AREA
	75 MM	M2	\$7.60	
	CONCRETE			
	150 MM	M2	\$34.00	
	200 MM	M2	\$45.00	
	250 MM	M2	\$52.75	
	300 MM	M2	\$60.55	
	BASE COURSE (CRUSHED STONES):			
	100 MM	M2	\$6.12	INCLUDES MATERIAL,
	150 MM	M2	\$9.35	EQUIPMENT & COMPACTION
	200 MM	M2	\$12.90	NO EARTHWORK INCLUDED
	300 MM	M2	\$20.40	
	BASE COURSE (BANK RUN GRAVEL):			
	150 MM	M2	\$4.60	
	230 MM	M2	\$6.55	
	300 MM	M2	\$8.70	
851XX	ROADS			
	BASE COURSE (BITUM. CONCRETE):			
	100 MM	M2	\$8.50	
	150 MM	M2	\$10.95	
	200 MM	M2	\$14.60	
	250 MM	M2	\$17.00	

APPENDIX A - FACILITY UNIT COST TABLE FOR FY05/06
MILCON PROGRAM
PART II - SUPPORT FACILITIES AND ITEMS (20 Mar 03)

	150 MM X 200 MM CURB/GUTTER	M	\$56.00	CONCRETE
852XX	SIDEWALK & OTHER PAVEMENTS			SEE CATCODE 851XX
85220	SIDEWALKS & WALKWAYS			
	100 MM CONCRETE	M2	\$46.14	INCLUDES GRADING &
	65 MM ASPHALT CONCRETE	M2	\$20.00	FORMING
86010	RAILROAD TRACKS W/TIES AND BALLAST	M	\$881.40	45 KG RAIL, COMPLETE
87110	STORM SEWER			SEE CHART A
87210	FENCING AND WALLS			
	CHAIN LINK:			TYPE A (9GA)
	2.0 M HIGH	M	\$64.80	INCLUDES 3 STRAND BARRED
	2.5 M HIGH	M	\$78.10	WIRE
	3.0 M HIGH	M	\$92.30	
	FENCE TOPPING:			
	BARRED TAPE	M	\$32.55	STAINLESS STEEL, MIL-B-52775 TYPE II
87250	ENTRANCE GATES			
	CHAIN LINK			2.5 M HIGH - 9 GA
	1.25 M WIDE	EA	\$316.50	
	3.5 M SINGLE	EA	\$864.80	FOR MOTOR OPERATED (SWING) ADD \$3,150
	7.5 M PAIR	EA	\$1,513.00	FOR MOTOR OPERATED (SWING) ADD \$3,150
	11.0 M PAIR	EA	\$2,082.00	FOR MOTOR OPERATED (SWING) ADD \$4,410
88110	WATER SPRINKLER SYSTEMS (186 M2 PROTECTED AREA ONLY, INCL GATE VALVE)			
	WET PIPE	M2	\$44.00	NO PUMPING, ELEV. WATER
	DRY PIPE	M2	\$49.70	STG, EXTERIOR PIPING & EXCLUDES
	DELUGE	M2	\$66.95	EXCLUDES DELUGE VALVE
	DRAFT CURTAINS	M2	\$110.80	CURTAIN AREA SUPPORTED BY EXISTING TRUSSES (HANGERS)
89240	FIRE HYDRANTS	EA	\$2,114.00	2 M DEEP
93210	SITE CLEARING & GRADING			
	GRADING:			
	ROUGH	M2	\$5.45	OPEN AREA, AVG 2' C/F
	FINE	M2	\$1.60	3 PASSES WITH ROLLER
	SITE CLEARING & GRUBBING	HA	\$10,030.00	MEDIUM DENSE AREAS
	BORROW	M3	\$19.10	UNCLASSIFIED, 8 KM HAUL
93220	LANDSCAPE AND PLANTING			
	TOPSOIL:			

APPENDIX A - FACILITY UNIT COST TABLE FOR FY05/06
MILCON PROGRAM
PART II - SUPPORT FACILITIES AND ITEMS (20 Mar 03)

	HAUL & SPREAD	M3	\$27.25	
	STRIP/STOCKPILE	M2	\$1.93	150 MM DEEP
	MULCHING:			
	WOOD CHIPS	M2	\$3.10	50 MM DEEP
	GRASS:			
	SEEDING	M2	\$0.85	HYD W/FERTILIZER
	SODDING	M2	\$8.05	25 MM DEEP BLUE GRASS
93310	DEMOLITION W/DISPOSAL			
	BUILDING:	M2	\$49.70	CONCRETE
		M2	\$43.90	STEEL FRAME
		M2	\$38.10	MASONRY OR WOOD
	BUILDING INTERIOR	M2	\$72.75	GUTTING INTERIOR
	LEAD PAINT REMOVAL/DISPOSAL	M2	\$110.80	WALL SURFACE AREA
	(ASBESTOS REMOVAL/DISPOSAL NOT INCLUDED. COST ESTIMATE FOR THIS WORK ITEM SHOULD BE BASED ON SITE SURVEY/EVALUATION AND LOCAL EXPERIENCE, AND SEPARATELY IDENTIFIED.)			
	PAVEMENT:	M2	\$17.50	150 MM CONCRETE
		M2	\$6.75	75 MM BITUMINOUS
93410	CUT AND FILL			
	EARTH:			
	CUT & FILL, 200 HP DOZER	M3	\$10.20	COMMON EARTH, 300' HAUL
	EXCAVATION, 3.2 KM ROUND TRIP	M3	\$10.95	COMMON EARTH
	TRENCH-MACHINE	M3	\$7.40	1.25 M DEEP/ .6M WIDE
	TRENCH-HAND	M3	\$56.15	
	BACKFILL-MACHINE	M3	\$8.80	INCLUDES COMPACTION
	BACKFILL-HAND	M3	\$42.80	INCLUDES COMPACTION
	ROCK:			
	ROCK, HARD	M3	\$112.70	BLASTING & MACHINE WORK
	SHALE, MEDIUM	M3	\$59.25	RIPPER DOZER
	TRENCH-HAND	M3	\$185.50	

CHART A To APPN A, Part II, PIPING - SITEWORK UTILITIES

SIZE MM	UNIT	BLACK STEEL \$
25	M	39.50
50	M	61.04
75	M	75.40
100	M	93.35
150	M	115.66
250	M	232.79
300	M	333.43
450	M	440.17
600	M	750.22
900	M	
1500	M	
SIZE MM	UNIT	CORRUGATED \$
25	M	
50	M	
75	M	
100	M	
150	M	36.01
250	M	55.66
300	M	66.42
450	M	93.35
600	M	156.19
900	M	242.37
1500	M	653.49
SIZE MM	UNIT	DUCT IRON \$
25	M	
50	M	
75	M	
100	M	66.42
150	M	75.40
250	M	132.86
300	M	168.75
450	M	296.23
600	M	398.56
900	M	
1500	M	
SIZE MM	UNIT	REINF. PLASTIC \$
25	M	
50	M	
75	M	34.11
100	M	61.35
150	M	75.02
250	M	170.55
300	M	209.06
450	M	
600	M	
900	M	
1500	M	

SIZE MM	UNIT	PVC
		\$
25	M	
50	M	17.95
75	M	26.93
100	M	35.91
150	M	53.86
250	M	70.01
300	M	87.97
450	M	
600	M	
900	M	
1500	M	

SIZE MM	UNIT	HDPE
		\$
25	M	
50	M	
75	M	
100	M	43.35
150	M	62.52
250	M	84.19
300	M	158.38
450	M	259.02
600	M	
900	M	
1500	M	

SIZE MM	UNIT	CONCRETE PLAIN	REINF.
		\$	\$
25	M		
50	M		
75	M		
100	M		
150	M	43.09	
250	M	50.27	
300	M	55.66	71.82
450	M	88.14	101.70
600	M	101.70	132.22
900	M		335.73
1500	M		599.77

SIZE MM	UNIT	VITRIFIED CLAY STANDARD	EXTRA STRENGTH
		\$	\$
25	M		
50	M		
75	M		
100	M	22.92	26.46
150	M	31.74	35.27
250	M	56.44	65.25
300	M	67.02	74.08
450	M	146.39	178.13
600	M	298.09	356.27
900	M	608.49	677.27
1500	M		

NOTES:

1. Black Steel, schedule 40, welded.
2. Corrugated metal piping, galvanized 16 gage up to 450mm, 14 gage for 600mm, 12 gage up to 1500mm.
3. Ductilte iron, cement lined, class 50 water pipe, 5.5m in length, and mechanical joint.
4. Reinforced Plastic, fiberglass reinforced, plain end pipe.
5. PVC, schedule 40, Class 150 pipe.
6. Cost includes furnishing and installing pipe only. Excavation, bedding, backfill and compaction must be added to these costs.
7. For cathodic protection (if required), add 14% of total piping cost.

CHART B

SOLAR ENERGY SYSTEM COST ESTIMATING

BUILDING AREA * (M2)		SOLAR SYSTEM COST (\$)
-----		-----
UP TO	1395.00	\$50.50 per m2. ** plus \$35,000.00
1396	4645.00	\$35.00 per m2. ** plus \$51,000.00
4646	AND LARGER	\$17.5 per m2 ** plus \$140,000.00

* Include only heated and/or cooled portions of facilities.

**Resulting dollar figure rounded up to next thousand dollar figure.

CHART C
METRIC/ENGLISH SYSTEMS

<u>QUANTITY FROM</u>	<u>MULTIPLY BY</u>	<u>TO OBTAIN</u>
LENGTH		
inch	25.400000	millimeter
foot	0.304800	meter
yard	0.914400	meter
mile (U.S. Status)	1.609344	kilometer
millimeter	0.039370	inch
meter	3.280840	foot
meter	1.093613	yard
kilometer	0.621370	mile
AREA		
square inch	645.160300	square millimeter
square foot	0.092903	square meter
square yard	0.836127	square meter
square mile	2.589998	square kilometer
acre	4046.873000	square meter
acre	0.404687	hectare
square millimeter	0.001550	square inch
square meter	10.763910	square foot
square meter	1.195990	square yard
square kilometer	0.386101	square mile
square meter	0.000247	acre
hectare	2.471044	acre
VOLUME		
cubic inch	16387.060000	cubic millimeter
cubic foot	0.028316	cubic meter
cubic yard	0.764555	cubic meter
gallon (U.S. liquid)	3.785412	liter
quart (U.S. liquid)	0.946353	liter
* barrel (U.S. liquid)	0.158982	liter
cubic millimeter	0.000061	cubic inch
cubic meter	35.314662	cubic foot
cubic meter	1.307951	cubic yard
liter	0.264172	gallon
liter	1.056688	quart
cubic meter	6.290021	barrel
MASS		
ounce (avoirdupois)	28.349520	gram
pound (avoirdupois)	0.453592	kilogram
short ton	907.185000	kilogram
gram	0.035273	ounce
kilogram	2.204622	pound
kilogram	0.001102	short ton
ENERGY, HEAT AND WORK		
kilowatthour	3.600000	megajoule
btu	1.055056	kilojoule
horsepower hour	2.684520	megajoule
Megabtu/hr (Mbtu/hr)	293.071100	kilowatt
megajoule	0.277780	kilowatthour
kilojoule	0.947817	btu
megajoule	0.372506	horsepower hour
kilowatt	0.003413	Megabtu/hr

POWER	ton (refrigeration)	3.517000	kw
	kw	1.000000	kw
	hp (electric)	0.745690	Kw
	kw	0.284333	ton (refrigeration)
	kw	1.000000	Kw (electric)
	Kw	1.341020	hp (electric)
CAPACITY	gpm (gallon per minute)	0.630910	lps (liter per second)
	lps	15.85	gpm

* one barrel = 42 U. S. Gallons

APPENDIX C (TM 5-800-4)
TRI-SERVICE MILITARY CONSTRUCTION PROGRAM (MCP) INDEX
FOR FY 2004 THRU FY 2010 PROGRAMS

Dates	INDEX	ESCALATION PERCENTAGE FOR FISCAL YEAR
1-Oct- 2001	2138	1.8%
1-Jan- 2002	2147	FY 02
1-Apr- 2002	2156	
1-Jul- 2002	2165	1.7%
1-Oct- 2002	2174	
1-Jan- 2003	2183	FY 03
1-Apr- 2003	2191	
1-Jul- 2003	2199	1.5%
1-Oct- 2003	2207	
1-Jan- 2004	2216	FY 04
1-Apr- 2004	2224	
1-Jul- 2004	2232	1.5%
1-Oct- 2004	2240	
1-Jan- 2005	2249	FY 05
1-Apr- 2005	2258	
1-Jul- 2005	2267	1.6%
1-Oct- 2005	2276	
1-Jan- 2006	2286	FY 06
1-Apr- 2006	2296	
1-Jul- 2006	2306	1.7%
1-Oct- 2006	2315	
1-Jan- 2007	2326	FY 07
1-Apr- 2007	2336	
1-Jul- 2007	2347	1.8%
1-Oct- 2007	2357	
1-Jan- 2008	2368	FY 08
1-Apr- 2008	2378	
1-Jul- 2008	2389	1.8%
1-Oct- 2008	2399	
1-Jan- 2009	2410	FY 09
1-Apr- 2009	2421	
1-Jul- 2009	2432	1.8%
1-Oct- 2009	2442	
1-Jan- 2010	2453	FY 10
1-Apr- 2010	2464	
1-Jul- 2010	2475	1.8%
1-Oct- 2010	2486	

Notes

1. Use 1.8% per fiscal year for projection beyond FY 2010
2. Tri - Service MCP Index (1,000) = 1 October 1979 ENR Historical Building Cost Index (1,900)
3. The MCP indexes were derived based upon the Inflation Rates in Percentages published in PBD dated 7 January 2003 by the Under Secretary of Defense (Comptroller),
4. This revised index table supersedes the index table published on 2 Feb 2002

TABLE I - SIZE ADJUSTMENT FACTORS**PART I - BUILDING (OTHER THAN FAMILY HOUSING)**

<u>SIZE RATIO</u>	<u>ADJUST FACTOR</u>	<u>SIZE RATIO</u>	<u>ADJUST FACTOR</u>	<u>SIZE RATIO</u>	<u>ADJUST FACTOR</u>	<u>SIZE RATIO</u>	<u>ADJUST FACTOR</u>
< 0.05	1.2750	0.9000	1.0110	1.8000	0.9490	2.7000	0.9250
0.0500	1.2750	0.9500	1.0050	1.8500	0.9470	2.7500	0.9240
0.1000	1.2690	1.0000	1.0000	1.9000	0.9450	2.8000	0.9240
0.1500	1.2320	1.0500	0.9950	1.9500	0.9430	2.8500	0.9230
0.2000	1.2020	1.1000	0.9900	2.0000	0.9420	2.9000	0.9220
0.2500	1.1750	1.1500	0.9860	2.0500	0.9400	2.9500	0.9210
0.3000	1.1520	1.2000	0.9820	2.1000	0.9390	3.0000	0.9210
0.3500	1.1320	1.2500	0.9780	2.1500	0.9370	3.0500	0.9200
0.4000	1.1140	1.3000	0.9740	2.2000	0.9360	>3.05	0.9200
0.4500	1.0980	1.3500	0.9710	2.2500	0.9350		
0.5000	1.0840	1.4000	0.9680	2.3000	0.9330		
0.5500	1.0720	1.4500	0.9650	2.3500	0.9320		
0.6000	1.0600	1.5000	0.9620	2.4000	0.9310		
0.6500	1.0500	1.5500	0.9600	2.4500	0.9300		
0.7000	1.0410	1.6000	0.9570	2.5000	0.9290		
0.7500	1.0330	1.6500	0.9550	2.5500	0.9280		
0.8000	1.0250	1.7000	0.9530	2.6000	0.9270		
0.8500	1.0180	1.7500	0.9510	2.6500	0.9260		

NOTE: Size ratio is determined by dividing the proposed building size by the average size shown in Part I of Appendix A. To determine the size adjustment factor, use the closest size ratio from above table.

PART II - FAMILY HOUSING

<u>PROJECT SIZE (NO. OF UNITS)</u>	<u>FACTOR</u>
1 - 9	1.25
10 - 19	1.15
20 - 49	1.10
50 - 99	1.04
100 - 199	1.00
200 - 299	0.93
300 & Over	0.90